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No. 53.

United States Hydrographic Office—Bureau of Navigation.

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THE CAPE VERDE ISLANDS.

TRANSLATED FROM THE FRENCH OF

CAPTS. PHILIPPE DE KERHALLET AND A LE. GRAS;

WITH



ADDITIONS, TO THE PRESENT DATE:

BY

WILLIAM H. PARKER,

LIEUTENANT. U. S. NAVY.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1873.

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ADVERTISEMENT.

The description of the Cape Verde Islands is a translation from the French of Captains Philippe De Kerhallet and A. Le Gras, with additions, to the present date.

R. H. W.

UNITED STATES HYDROGRAPHIC OFFICE,
Washington, D. C., October 30, 1873.

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NOTE.

The courses and all bearings are true.

The distances are expressed in sea-miles of 60 to a degree of latitude.

A cable's length is assumed to be one-tenth of a sea-mile.

CAPE VERDE ISLANDS.

Variation in 1873, $19^{\circ} 30'$ W.; annual increase, $3'$.

GENERAL REMARKS.

The Cape Verde Islands lie between the parallels of $14^{\circ} 46'$ and $17^{\circ} 12'$ north latitude, and the meridians of $22^{\circ} 40'$ and $25^{\circ} 22'$ west longitude. They were discovered on the 3d of March, 1460, by Antonio Noli, a Genoese in the service of Portugal. This group is distant about 135 leagues from Cape Verde, the southern islands being a little nearer its parallel; it extends about 160 miles from east to west, and 150 miles from north to south.

These islands, a dozen in number, are divided into three groups.

The northwestern includes St. Antonio, St. Vincent, Santa Lucia, Branca, Raza, and St. Nicholas; this group lies ESE. and WNW., forming a distinct chain.

The northeastern includes Sal and Boavista, both groups being included in the general name of the Windward Islands. The channels which separate these islands are generally free from dangers.

The Leeward group includes Mayo, St. Jago, Fogo, and Brava; to the northward of the latter are two large rocky islets called the Rombos. This group is situated nearly on an ENE. and WSW. line. All the channels between the islands are clear, except that which separates Boavista from Mayo, in which lies a dangerous reef called Leton Rock.

The area of the twelve islands is estimated to be 1,241 nautical miles, and the population, which is divided into nine districts and twenty-nine parishes, at about sixty thousand. The great majority of the inhabitants are either native Africans or mixed with European blood. The Portuguese, including the convicts, are greatly in the minority, and are scattered among the islands as merchants, artisans, &c. The greatest virtue of these islanders is their hospitality, but their natural indolence tends to the perpetuation of their poverty.

These islands, like the Canaries, seem to be of volcanic origin. Their surface is generally arid and mountainous, and there is little vegetation except at the bottom of the ravines.

Climate.

The climate is very hot during the dry season, from December to July, but it is not so unhealthy as during the rainy season, which continues from August to November. During this season pernicious fevers prevail, and sometimes even the yellow fever; the small-pox is very dangerous and makes great ravages, principally among the blacks. The scarcity of water, and the droughts which often occur, render the harvests very irregular and cause terrible famines. At times torrential, devastating rains are the cause of much misery. In addition to this are the invasions of countless locusts, which ravage the fields, and in a few hours strip them of all vegetation. No less than four great famines are mentioned. Those of 1773 and 1831 each lasted three years: the first carried off one-half of the population of St. Jago, and the second more than 12,000 souls. In 1846 a part of the inhabitants were obliged to live on herbs.

Productions.

Rice, Indian corn, tapioca, grape-vines, sugar-cane, and tobacco are raised in the valleys wherever there is a bed of vegetable earth. Indigo and cotton-plants grow without culture, and the tamarind and palm-trees are numerous. There are no large woods, the forests, the primitive richness of these islands, having been destroyed; the wood of the cocoa-nut and fig-tree is used in building. Good water can only be obtained in small quantity. Game, such as partridges, quails, &c., is now very rare. There is a small number of horses, asses, and mules on some of the islands, and a very good breed of working cattle is obtained by crossing the African buffalo and the European cow. The colonial industry is principally confined to working salt-mines, the extraction of oil, and a little sugar, the distillation of tafia and the manufacture of cotton and woolen fabrics which are sent to the coast of Africa. Fish abound around the islands and in all the bays.

Exports.

The principal exports are, from the Windward Islands, coffee, orchal, salt, and goat-skins; from the Leeward Islands, salt, a seed called *purgueira*, goat-skins, hides, orchal, coffee, sugar, live birds, &c. When the rains are abundant large quantities of corn and beans are exported. The approximate value of the exports is about \$500,000 a year.

Imports.

The imports consist of English and French cotton goods, wines of all kinds, ready-made clothing, flour, butter, iron-work, &c., and woolen stuffs, such as cashmere, broadcloth, alpaca, &c.

The most important place is the town of Praya, on the island of St. Jago; it is the official residence of the governor and civil and military authorities. The former lives

part of the time at Brava, this island being more healthy and more agreeable than St. Jago.

The Cape Verde Islands are in the zone of the NE. Winds. trades, which prevail there from November to July, often blowing with much greater force than farther to the westward. During the stormy season, from July to November, they are generally replaced by winds variable from SE. to SW. This is the period of gales from SE. to SW., which often blow with fury and render the anchorages which are exposed to them very dangerous; this is also the season of tornadoes and general stormy weather. Trades. It is a fact that in this group the NE. trades are never constant nor so perfectly established as farther to the westward, and it often happens that they are lost in the vicinity of the islands and followed by calms and variable winds; this is particularly the case during the wet season. Vessels bound across the line should modify their route according as they are going to ports on the west coast of North or South Africa or South America.

In the zone included between the meridian of the westernmost island and the coast, and extending south as far as the equator, there are variations in the NE. trades, even during the fine season, which do not occur farther to the westward; they are probably due to the vicinity of the coast of Africa, the sun from July to October raising the temperature of the land on the Guinea coast, and hence drawing the wind from the S. and SW. Farther to the west, between the meridians of 23° and 28° W., the NE. and SE. trades are separated only by a narrow belt of variables and often unite at the equator. In all routes to the westward there is then an advantage in crossing the line to the westward of the Cape Verde Islands. Harmattan. The harmattan, which blows from the coast during December, January, and February, is charged with fine sand, which produces a thick haze and droughts, but it is not unhealthy.

The following table, the result of a great many observations, will give a general idea of the climate of the islands :

Months.	Winds.	Mean barometer.	Thermome- ter—Fah- renheit.	Remarks.
January ...	N. to NNW.	29.98	68	Fresh breezes.
February ..	NNE. to NW.	29.84	68	Do.
March	NNE. to N.	29.76	66	Do.
April	N. and NNE.	29.76	64	Strong winds; dew.
May	NE. and NNE.	29.80	66	Fresh winds; dew.
June	NE. to NW.	29.92	77	Cloudy toward end of month.
July	NE. to SW.	30.07	80	Cloudy; variable winds; tor- nadoes.
August	NE to SSW. and SSE.	29.76	84	Tornadoes; rains; very hot.
September .	NNW. to SSE.	29.80	82	Tornadoes; rains; fogs.
October	NE. to SW.	29.88	82	Cloudy; rains; dews; mists.
November .	NNE. to SW.	29.80	71	Fresh breezes; dews; squalls.
December..	E. to NNE.	29.80	71	Fresh breezes.

Fogs

Currents.

Fogs are frequent and very thick.

The islands are in the track of the African, Polar, and Guinea Currents, which set to the SW. with a velocity of $\frac{1}{4}$ of a mile per hour, influenced more or less by the force of the prevailing wind. The western limit of the Polar Current at the parallel of Cape Verde lies between the Islands of Sal and Boavista and between Mayo and St. Jago; from thence its direction is SW. Among the islands the currents are sometimes variable, but they set generally to the S. and SW.; very rarely to the NW., and still more rarely to the SE. or ESE. Farther to the westward, at about the meridians of 26° and 27° W., the currents, being clear of the islands, generally set to the SW., WSW., and W. To the southward of the islands, as far as the equator, and in the belt included between the southern limit of the Polar and northern limit of the Equatorial Currents, their directions are very variable.

The eastern branch of the Polar Current is lost below the parallel of 10° north latitude in very irregular drifts, which, combined with the counter-currents of the Equatorial, generally set, especially between July and October, to the ESE., E., and NE. This is again subdivided, one of the branches passing to the southward of Cape Palmas, and taking the name of The Current of Northern Guinea, and the other setting to the NE. and N., and near the coast even to the NW., as far as the Bissagos Islands. After the southwest winds (solar breezes) mentioned above, there

is, near the coast of Senegambia, a change in the direction of the current which lasts for several days.

All the islands are high and may be seen from a great distance when the weather is clear. Unfortunately fogs and mists frequently hang around the islands, rendering the making of the land difficult, and too great caution cannot be exercised when running for them. The general set of the currents is to the westward, particularly near Sal and Boavista, and these currents have occasioned the loss of a large number of ships approaching the islands from the eastward. Although it may seem improbable that there would be any considerable error in the reckoning in so short a passage as from the Canaries to the Cape Verdes, still there are many instances of such, as well in easting as in westing. It will be prudent, therefore, as regards errors in westing, to keep 20 leagues to the eastward of Boavista before standing in to make the land, lest in keeping a direct course for that island you should pass between St. Nicholas and Sal Islands, and find yourself to the westward of Boavista when your reckoning placed you to the east of it. It is always advantageous to approach the islands from the northward during the trades. Vessels coming from the southward will be exposed to calms and squalls, and beating through the passages is often tedious, as the wind draws through with force and causes a rough sea.

Although as a rule these channels are clear and safe, some precautions must be taken, depending on the strength and direction of the prevailing wind. The channel between St. Antonio and St. Vincent should only be taken with a fair wind. Very little would be gained in beating against the NE. wind, which is strong here and often accompanied by a SW. current. If obliged to attempt it, it will be better to hug the south coast of St. Antonio, where the wind is often lighter and the sea smoother than in the middle. Near the north shore of St. Vincent there is generally a counter-current setting NE., but the coast of St. Antonio is bolder, and safer when beating close in shore.

The passage between St. Vincent and St. Lucia is marked Foul Channel on the charts. Her Majesty's ship *Leven* beat through and did not find less than 6 fathoms, with 15 fathoms in mid-channel. With a strong wind the sea is very rough, and often breaks, which is caused by the swift, irregular currents, as the depth of water is said to be from 14 to 17 fathoms in the middle, decreasing toward the shores. It should be taken only with a manageable wind.

- St. Lucia and
Branca. Unless wishing to anchor off the eastern coast of St. Lucia, it is better not to take the passage between that island and Branca. The one between Raza and St. Nicholas is preferable. The same remarks apply to the channel between Raza and Branca. If attempted keep nearer Raza, as the water is deeper. In the channel between Raza and St. Nicholas the currents are very irregular, and it is better to go through only with a fair wind.
- Branca and Raza.
za.
- Raza and St.
Nicholas.
- Sal and Boa-
vista. Vessels may pass between Sal and Boavista, but it is preferable to keep nearer Sal Island as there are some dangers on the shores of the other, viz, the Hartwell Reefs and Bonetta Rock, the existence and position of the latter not being positively known. At night, and even in the daytime, if the land is not perfectly recognized, it will not be prudent to take the passage.
- Boavista and
Mayo. In the channel between Boavista and Mayo there is a dangerous reef called Leton Rock, which is fully described on page 32. On account of this danger this passage should not be taken at night or during thick weather. When the land can be distinctly seen and recognized, it is safe and practicable, keeping about 4 miles from Boavista, if bound to that island; but if going to Mayo, it is better to pass between it and the rock, keeping 5 or 6 miles from the island. At all times, when standing near Mayo, a sharp lookout must be kept for Galhao Reef, which lies off the north point of the island. The currents generally set a few degrees to the W. of S., with a velocity of from $\frac{1}{2}$ to $\frac{2}{3}$ of a mile per hour, according to the strength of the wind. They must be noted and allowed for. Between Mayo and St. Jago the channel is narrower than the two preceding; it is clear and navigable at all times, although it would be difficult to beat through against a fresh NE. breeze. When entering from the northward, whatever may be the direction of the wind, it is better to avoid the east shore of St. Jago, near which are calms, violent squalls, and often a current setting to the SW. and W. St. Jago should never be approached close to, especially with the wind at NE., on account of the calms caused by the deflection of the winds by the high land, and the heavy swell which sets toward the shore on the east side. Blisset Reefs, off the south side of Mayo, must be given a good berth.
- Mayo and St.
Jago.
- St. Jago and
Fogo. The passage between St. Jago and Fogo is wide, safe, and practicable at all times. It is better, in general, to steer a middle course or to keep a little nearer to Fogo, especially with the wind at NE., to avoid the calms to lee-

ward of St. Jago, and also the currents, which are stronger off its SW. shore than in any other part of the passage.

In the narrow passage between Fogo and Brava the winds are always strong, particularly those from the northward, (NW. to NE.) It can only be taken with a fair wind, and Fogo should be approached nearer than Brava, particularly at night, on account of the Rombos Islets. Vessels may pass midway between these islets and Brava.

Fogo and Brava.

To recapitulate: in navigating the passages between these islands it is necessary to watch closely, and avoid as much as possible the calms, currents, and squalls which are found there. If not bound to any port in the islands, it is always preferable to pass to the westward of the whole group, sighting St. Antonio.

The establishment of the port varies in the archipelago from 6 hours to 7 hours 45 minutes. Rise and fall from 4 to 6.5 feet.

Tides.

The depth of water is very great near all the Cape Verde Islands, and the bank of soundings is often so narrow that the anchorage, if there is any, may become dangerous.

Soundings.

The greater part of the coasts are abrupt, formed by high, perpendicular cliffs, and cut up by deep ravines which present in a few places sandy beaches. The south sides of Mayo, Sal, and particularly Boavista, are exceptions, presenting almost everywhere sandy shores divided by rocky points.

Coasts.

ST. ANTONIO.

St. Antonio, the northwestern and largest island of the group, is $22\frac{1}{2}$ miles long from E. to W., and about the same distance ENE. and WSW.; it is principally inhabited in the northeastern part, where the coast is divided by two ravines at the bottoms of which there are a little verdure and a few small villages. The climate is healthy, and its soil is the most productive of any in the group; it produces about 1,000 quintals of excellent coffee, of which 50 per cent. is exported; also 500 pipes of wine; tafia, sugar, and corn. There is a source of mineral waters containing lead and tin which has not yet been explored. The population, from 18,000 to 20,000 souls, live in an almost savage state, and are without education or religion. Seen from a distance, and particularly from the westward, St. Antonio appears like an assemblage of high mountains; in fact, its central part is traversed by a chain, which extends from the eastern point nearly to the western, and then turns abruptly to the southward, almost at a right angle to its former direc-

tion. To the westward of this chain is the Sugar Loaf Mountain, the highest summit on the island, (7,386 feet.) Between this peak and the main ridge is an immense ravine, at the bottom of which a torrent flows towards the north coast. The coast of St. Antonio is perfectly safe, all dangers lying close to. It is almost everywhere abrupt except at the mouths of the streams; these streams irrigate the soil and take the place of rains in fertilizing it.

Anchorage off
Pointa do Sol.

Pointa do Sol, or North Point, extends, as a low, sandy, point, some distance from the cliffs, with a reef about $\frac{1}{2}$ mile beyond it. There is a custom-house here; also a chapel and some stores and houses. Anchorage may be taken to the west of the point, and WNW. of the custom-house, in from 8 to 16 fathoms. This anchorage is on the open coast, and is sheltered from winds from SW. to SE. (through S.) by the island. Although the winds from the northward blow directly on this coast, the native seamen affirm that they do not blow home at the anchorage, being deflected by the high land, and that their existence would not be known were it not for the heavy swell which sets in to the anchorage.

Directions.

Pass at least 1 mile from North Point to avoid the Cavallo Blanco Reef, which extends about $\frac{1}{2}$ mile from it, and over which the sea continually breaks. After doubling the point a white spot will be seen on the rocks, off which the anchor may be let go in 8 fathoms, sandy bottom, under high cliffs which rise perpendicularly from the sea.

Water.

Water in small quantities may be obtained from a spring near the beach. The landing is in a little creek near the village, and is bad when the sea is at all rough.

Tarrafal Bay.

Tarrafal Bay is situated about 2 miles north of South Point; it is sheltered from winds from S. to N. (through E.) Westerly winds do not blow home, it is said, but sometimes there is a swell which produces a surf on the beach. On the edge of the bank of soundings, which is $\frac{1}{4}$ of a mile off shore, there are 40 fathoms, decreasing gradually for 1 cable to 8 fathoms, and then falling suddenly to 4 fathoms.

Shoals.

About 300 yards N 16° E. of the south point of the bay is a shoal about 1 cable long, with 3 and 4 fathoms on it; off its south side are 6, and off the north side 8 fathoms. Two hundred yards N 65° W. of the same point there is another small patch with 4 fathoms; 5 fathoms off the northern and 6 fathoms off the southern edge.

Directions.

Tarrafal Bay may be known by a green plantation, and a black, sandy beach under a cliff, that come in view after rounding South Point. A good berth may be had in 30

fathoms, 3 cables off shore, with a red mark in the cliff bearing E $\frac{3}{4}$ N. Caution will be required in anchoring, as the shore is steep-to. Anchorage may also be taken at about 2 cables off shore and farther to the northward in 20 fathoms.

It is high water, full and change, at Tarrafal Bay at 7^h; rise of tide about 5 feet. Tides.

The best water in the group may be obtained here, as also provisions. Water.

The anchorage at Carvoeiros, on the SE. coast of the island, and nearly in front of Porto Grande, in the island of St. Vincent, is on the open coast, and is good only during the NE. trades. Anchorage is taken off the mouth of the river Janella, abreast the chapel, in from 8 to 14 fathoms, from 1 to 2 miles from the beach. There is a small village here, and plenty of water and fire-wood may be obtained. The landing is abreast the houses, but can only be reached by passing through a channel 30 feet wide, which is dangerous after heavy rains. Anchorage off Carvoeiros.

Anchorage may also be taken off Simao, situated 1 $\frac{1}{2}$ miles SE. of Carvoeiros, in from 8 to 11 fathoms. It is good during the NE. trades only. Water and fire-wood may be obtained. Anchorage.

Santa Cruz, the capital of the island, is 12 miles to the westward of East Point, in the fertile plain of Ribiera Grande. Off the point, 1 $\frac{3}{4}$ miles to the westward of the village, a reef and foul ground extend about a mile, narrowing the channel between St. Antonio and St. Vincent to 6 miles, in a SE b E. direction. Santa Cruz.

One-half mile off the northern part of East Point is a rocky islet called Bull Rock. Bull Rock.

ISLAND OF ST. VINCENT.

The island of St. Vincent is very high and undulating. It is separated from Santa Lucia by a passage about 4 $\frac{1}{2}$ miles wide, and from St. Antonio by one from 7 to 8 miles wide. The island is 13 miles long from E. to W., and its greatest breadth from N. to S. is 9 miles. Two principal chains facing NE. and SW. surround it, forming in the center a deep gorge opening to the NW. on the beautiful valley of Porto Grande. The highest point (2,483 feet) is in the middle of the NE. chain. It is principally inhabited by fishermen and the numerous workmen attracted thither by the coal-depots. The climate is said to be healthy. Water is very scarce, and the trees do not flourish, on account of

the violence of the winds. The coast is generally high and abrupt, and without dangers.

Salmassa Bay. There are two small bays on the NE. side, with sandy beaches, but they are entirely open and are not frequented.

Dos Gato's Bay.

Bird Island.

Bird Island is a rocky islet 273 feet high, 600 yards long from N. to S., and 150 yards broad. When seen from the N. or S. it appears conical in shape. It is on the parallel of Point Columna, and about 1 mile from it; it is bold, forms a good landmark, and may be passed on either side.

Porto Grande.

Porto Grande, situated on the NW. side of the island, is the largest and best bay in the group; it is $3\frac{1}{2}$ miles wide at the entrance, from Point Columna on the north to Point Botelha on the south, $1\frac{1}{2}$ miles deep, and is sheltered from wind and sea to the northward by St. Antonio, and on all other sides by the high lands which surround it. It is capable of holding 200 large vessels anchored in from 4 to 13 fathoms, on a sand and gravel bottom. With the wind at NE. violent squalls often come off the mountains, and all prevailing winds send in a swell which is particularly disagreeable if the ship is riding to the counter-current and across the entrance.

Points Columna and Botelha.

Point Columna is high and abrupt; at the foot of the cliff which terminates it is a large rock which, from a distance, resembles a column. The cliffs near this point, and also in the vicinity of Point Botelha, are high and steep.

Soundings.

Between the points of the entrance the depth is even, with 24 fathoms in the center, shoaling gradually on the west side to 9 fathoms at $\frac{1}{2}$ cable from shore; to the eastward there are 17 fathoms within 80 yards of the rocks. In the center of the bay the depth is 10 fathoms, shoaling gradually in all directions towards the shore, the Orontes Bank, with 21 feet on it, being the only obstruction. The 4-fathom limit is about $\frac{1}{4}$ mile from the bottom of the bay and $\frac{1}{6}$ mile from Custom-House Point. The holding-ground is good; bottom generally of sand and gravel or sand and mud.

Bottom

In the SE. part of the bay the bottom seems to be of rock covered with a thick bed of sand; therefore it will be prudent to cockbill the anchor before letting go, as there are numerous cases on record of anchor-stocks being broken from not taking this precaution. The water is very clear, and on a calm day the bottom can be seen in 7 fathoms.

Directions.

Making the land of the Cape Verde Islands is sometimes difficult on account of the fogs which often prevail, so thick at times that St. Antonio cannot be seen from Porto Grande, although only 8 miles distant. When coming from the northward it will be better to run for St. Antonio, whose

shores are bold and high, than for St. Vincent, whose NE. point is low and consequently dangerous.

From a point 12 miles NE. of St. Vincent its southeast point will appear like an island. When off the eastern entrance of the channel, between St. Antonio and St. Vincent, Bird Island will be easily recognized, as also the curious rock off Point Columna, and, farther on, Point Botelha, so called from the bottle-shaped rock which surmounts it. The best course is inside of Bird Island, making allowance for the tidal current which sets to the NE. during the flood. Sailing-vessels should reduce sail, as the squalls are heavy over the land. When off the entrance, the fort, on a hill to the left of the town, will be seen, and about 1 mile N 55° E. of the fort a peak, on the summit of which is a flag-staff used for signaling the approach of the mail-steamers. Moorings are laid down in 5 fathoms $\frac{1}{2}$ mile W $\frac{1}{4}$ S. from the coaling-jetties; they are corvettes' cables, and large vessels should not rely on them. If in want of coal a berth should be taken as near the buoys as possible, where the water is smoother and the squalls less felt than elsewhere. A good berth is in from 6 to 7 fathoms, Bird Island bearing N 22° W., and the fort N 61° E.; also in 8 fathoms, the signal-staff bearing N 80° E., the church S 75° E., and Bird Island N 25° W. A good berth for a large vessel is in 10 fathoms, Bird Island bearing N 20° W. and the fort E 3° S. During the NE. trade, violent squalls are frequent, and vessels should always have an anchor ready to let go in case of parting or drifting.

Approaching Porto Grande from the southward, Bird Island should be left on the port hand. When coming from Tarrafal Bay care must be taken not to be set to leeward by the current. The NE. winds are very fresh in the passage between the islands, and the current sets with considerable velocity to the SW.; hence it will be better to steer to the eastward along St. Antonio for some distance before striking across to Porto Grande.

Going into Porto Grande at night the high land all around is very deceptive, and Bird Island is the only guide: it always shows clearly and distinctly even in the darkest nights. After passing it bring it to bear NW b N $\frac{1}{4}$ N., and anchor on that bearing in 6 fathoms, sandy bottom, the west point of the bay bearing W $\frac{1}{4}$ S.

Orontes Bank is a shoal of about 1 cable in extent, with 21 feet of water on it. Its center lies on the following bearings, (taken from chart:) Bird Island N 25° W.; fort N 45° E.; church E 3° N. *Hydrographische Mittheilungen*, No. 19,

- Notice. for 1873, states that “the German sloop of war *Undine* did not find the *Orontes* Bank as laid down on the charts, but there is a 3-fathom patch to the eastward of it;” also “the soundings showed somewhat less depth inside the two mooring-buoys than shown on the British Admiralty chart 370 and United States Hydrographic Office chart No. 253, which, however, may arise from the influence of the constant and often very high swell. The 3-fathom line trends about a cable’s length farther seaward, especially off the town, while the 5-fathom line approaches somewhat closer to the coast.” Ships of 20 feet draught and more should not anchor inside the buoy.
- Tide. It is high water, full and change, at 7^h. Rise of tide about 2½ feet.
- Resources. This harbor is the port of call for mail-steamers to and from South America and the west coast of Africa, as well as for men-of-war vessels of all nations. Coal is brought off in bags, in iron barges holding about 20 tons each, towed by steam-launches, and is put on board very rapidly. The
- Coal. water from the wells is hardly fit for cooking; good distilled water may, however, be obtained, but it would be cheaper for steam-vessels to distill their own. Other supplies may be had to a moderate extent. This harbor is well adapted for refitting in and for acclimatizing the crews of vessels going to the African station. The climate is healthy and there are no endemic diseases. The landings are good alongside the coal-wharves. The old fort near the town is armed with four old guns, which would probably be dangerous to fire. The station is commanded by a major of artillery, who has about 50 poorly clad Portuguese soldiers under him.
- Water. San Pedro Bay. On the SW. coast is a little bay called San Pedro. Vessels may anchor off the sandy beach in from 10 to 12 fathoms during the fine season; it is entirely open from SE. to SW. Water and wood may be obtained there.
- Still Bay. Still Bay is a little cove a few miles to the westward of the south point of the island; it is 1½ miles wide at the entrance, and anchorage may be taken nearly in the middle and just inside of a line joining the two points, in 20 fathoms; sand and mud bottom. Landing is easy; the bay is open to SW., but good with NE. winds. A bank extends from this bay to Porto Grande, ½ mile from the shore, with a depth of 15 fathoms; bottom of sand and coral.

ST. LUCIA ISLAND.

St. Lucia, which is 7 miles long ESE. and WNW., 2 miles broad in its western and 1 mile in the eastern part, is separated from St. Vincent by a channel 4½ miles wide, and

from Branca by one $3\frac{1}{2}$ miles wide. In the middle of the latter there are 13 fathoms, decreasing gradually toward either shore. There is no fixed population, and the island is visited only by herdsmen and laborers, who come in March to collect orchilla in the mountains.

The eastern part is high and covered with hummocks. When seen at a distance from N. or S. it appears like an island. From thence it is low to the south point, where it rises to about 1,000 feet, and continues high toward the NW., where it is traversed by a range of hills running WNW. and ESE. The highest point (1,209 feet) is in the middle of the island.

The shore is almost everywhere rocky and inaccessible; but in the SW. part, between Pointa da Cruz and Monte Grande, (the south and west points,) there is a little cove, with a sandy beach, off which vessels may anchor in from 7 to 14 fathoms, sand and stony bottom, with Leon Island bearing ENE. Leon Island is quite high, and about 200 yards from the beach, in the SE. part of the cove, the bottom is rocky. This anchorage is only good during the fine season.

A little to the northward of the south point of the island, (Pointa da Cruz,) which is crowned with a conical height of 900 feet, are the ruins of a village and some wells of brackish water. The south coast trends E. and W., and a plateau of shoals, on which there are from 13 to 16 feet, extends along it about $\frac{1}{2}$ mile from the shore. There is a good landing in a little indentation situated nearly in the middle of this coast.

In navigating between St. Lucia and Branca the S. and E. parts of St. Lucia should not be approached within one mile, as the ground is uneven. There are soundings, also, 2 or 3 miles to windward of St. Lucia, and the water is discolored, which may serve as a guide in approaching the island.

BRANCA ISLAND.

Branca, lying SE. of St. Lucia, is a small island 2 miles long and about $\frac{1}{2}$ mile broad. It is high and almost inaccessible, except in very fine weather. Monte Gordo, in the west, is 1,456 feet high. The east point is low and sandy, and has a reef extending out about two cables. Vessels may anchor off the point in 3 fathoms, but the squalls off Monte Gordo are very heavy. The NE. coast is steep, with from 6 to 10 fathoms close to; $\frac{1}{2}$ mile off the SW. shore the soundings vary from 12 to 15 fathoms. The port

Anchorage

Leon Island.

Ruins.
Wells

Shoals.

Caution.

Anchorage.

Water.

Tides.

and village of Branca are on the northwest side of the island. Orchilla abounds. Fresh water may be obtained near the village. It is high water, full and change, at St. Lucia and Branca about 8^h. The flood sets to the westward and the ebb to the eastward with a velocity of 2 knots during the springs.

RAZA ISLAND.

Coral plateau,
described by
Captain Kerhallet,
French navy.

Raza lies 3 miles SE. of Branca, with irregular soundings between them of from 6 to 20 fathoms. The island is almost round and the shores are steep and nearly inaccessible. The highest point on the island is 316 feet; in its eastern part there are a number of hillocks. There is a bad landing on the west side near the west point. There are a few inhabitants, who gather orchilla and tend the cotton-plantations. The latest French directions state that at one-third of the distance from Raza to Branca there is a coral plateau, running NNE. and SSW., on which the least depth is 5.3 fathoms, increasing gradually to the west to 14 $\frac{1}{4}$ fathoms, and to the east to 17 and 20 fathoms. It is recommended, in taking this passage, to approach Raza rather than Branca. These soundings do not agree exactly with the English charts. The sea is said always to break on this bank, on account of the strong tide or current setting through.

ST. NICHOLAS ISLAND.

The island of St. Nicholas is irregular in shape; it is 25 miles long from E. to W., and its greatest breadth is 13 miles. The eastern point forms a low plateau, remarkable for a pyramidal rock, which at a little distance resembles a sail. The western point is low and sandy. The northwest portion is the highest, where Monte Gordo attains an elevation of 4,415 feet; to the northward of this is Mount Martinez, which is 3,412 feet high; from thence high mountains extend to the eastward, conspicuous among them being the Sugar-Loaf (2,007 feet) near the middle of the island. In clear weather these mountains can be seen 45 miles. The coast is bold and cliffy. There are no anchorages on the north coast, and it should not be approached nearer than 3 miles, on account of the currents and the calms produced by the high land. The climate is very healthy and the soil well cultivated. The inhabitants, 7,000 in number, are industrious. The products are vegetables, fruits, and corn, and also about 400 pipes of wine. The imports are lumber, glass ware, and iron. Praya Branca, situated in the mount-

ains to the NW., and about 3 miles from the coast, is the most important place; it contains about 300 houses.

Freshwater or Carrical Bay is $3\frac{1}{2}$ miles west of East Point. In a ravine at the bottom of the bay the river Carrical empties into a pond from which good water may be obtained. During the fine season the anchorage is exposed to violent squalls which come off the hills, and although the wind blows off shore the sea is very rough close up to the beach. Vessels only come here for water.

When coming from the eastward care must be taken to avoid a reef, which from about $2\frac{1}{2}$ miles west of East Point extends out $\frac{1}{2}$ mile from the shore, over which the sea breaks. After passing the eastern point of Freshwater Bay, steer in for the beach, and when the coast to the eastward is shut in by this point let go the anchor in 7 fathoms, $\frac{1}{2}$ mile from shore, on a sand and gravel bottom. This anchorage must not be attempted during stormy weather; in this case it is better to anchor in St. George's Bay. Water should be taken at low tide; the tide rises $6\frac{1}{2}$ feet and at high water the pond is overflowed. The landing is good during fine weather. The establishment in this bay is 7^h 46^m.

On the eastern side of the tongue of land which extends to the southward, and 10 miles west of Freshwater Bay, is an anchorage in St. George's Bay, called Rolla Road, where provisions and a small quantity of water may be obtained. This roadstead is $5\frac{1}{2}$ miles north of South Point, and is easily recognized by the conical Mount Formosa which overlooks it, and also by the flag-staff of Fort Preguiz, which is situated on a height near the shore. Off Point Ellicombe, the northeast point of the bay, a rocky shelf extends SE. about 1 cable, and off the southern point, Point Krabbe, there is a line of breakers which should not be approached nearer than $\frac{3}{4}$ of a mile. Anchorage is taken at 2 good cables from the beach, in from 10 to 13 fathoms, sandy bottom; the flag-staff on the fort bearing N 74° W. From 9 fathoms the soundings increase rapidly to 17, 35, and 52 fathoms; and as outside of 9 fathoms the bottom is rocky, vessels must anchor near the shore. Violent squalls off the mountains are frequent. There is a good landing in a little cove about 2 cables south of the anchorage; a small island, lying off it, shelters it from the sea. There are here a few houses and a custom-house, and the place is much frequented on account of its vicinity to Ribeira Brava, the capital of the island.

No particular directions are required. Steer for Mount Formosa, when seen, and anchor, as stated above, when the

Freshwater Bay.

Directions.

Water.

Tides.

Saint George's Bay.

Rolla Road.

Anchorage.

Soundings.

Directions.

fort bears N 74° W. If coming from the southward allowance must be made for the current, which sets to the south toward Point Vermelharía. Be sure of the soundings before letting go the anchor. If a pilot is wanted, fire a gun.

Foreado Bay. Between Preguiza and Point Vermelharía there are several small coves. The first, called Foreado, is situated between two rocky points surrounded by breakers; in-shore the depths are from 11 to 22 feet, increasing suddenly, 1 mile from the beach, to 28 and 50 fathoms. There is another small bay on the south coast, between Points Vermelharía and Fidalgo, called Lapa Bay, which is good during the NE. trades. Water and refreshments may be obtained.

Tarrafal Bay. Tarrafal Bay is $5\frac{3}{4}$ miles to the northward of the south point of the island, (Point Vermelharía,) and is open from SW. to W. At $\frac{3}{4}$ of a mile from the beach there is a depth of 45 fathoms, and from thence the soundings decrease regularly but rapidly to 8 fathoms. The custom-house is in the SE. angle of the bay. A good berth may be taken in about 10 fathoms on the following bearings: South Point SSE $\frac{1}{2}$ E., custom-house E b S $\frac{1}{2}$ S., and Mount Otto do Mar N b E. The anchorage is sheltered from SE. winds, and it is said that those from the SW. never blow with force. Violent gusts often come from the two gullies to the eastward, and therefore when the wind is strong from the NE. it is very difficult to turn into the bay. To avoid these flaws, vessels must anchor right against the point which divides the gullies, where they will ride easy under its lee in about 15 fathoms. There is said to be a current setting into the bay; therefore, when coming from the southward, a good berth should be given to the coast, for if becalmed under the land a vessel might be drifted on shore.

Water. Water may be easily obtained, as also provisions, from the houses of the shepherds near the anchorage. Ribeira Brava is 6 miles in the interior.

Coast. From Tarrafal Bay to the west point of St. Nicholas there is a bank of soundings with from 40 to 20 fathoms $\frac{1}{2}$ mile from shore. In the last depth there is anchorage on sandy ground off the west point. The shore is low and sandy, the land rising gradually inland. On the contrary, from the custom-house to South Point the coast is high and lined with rocks.

Northwest Bay. A little to the northward of West Point, and in front of Mt. Gonedo and the village of Praya Branca, is a small bay, with an islet in the middle called Northwest Bay; it is suitable only for small craft.

From West Point the coast trends about NE. for 7 miles, where the north point of the island is formed by a round, cliffy point having a summit 2,311 feet high. At the northwest side of the point is a sand-bank, and a reef of rocks stretches to the northward 5 cables. E b S $\frac{1}{4}$ S., 8 miles distant, is Northeast Point, the coast between forming a bight 2 $\frac{1}{2}$ miles deep. Eastward of the point the coast trends E by S. for 13 miles to East Point, and is composed principally of cliffs having rocks or sand at their bases.

North Point.

Northeast Point.

SAL ISLAND.

Sal Island is 17 $\frac{1}{2}$ miles long from N. to S., 7 miles broad in the widest and 2 miles in the narrowest part. In the northern part are several isolated peaks, the highest being the conical Martinez, which is 1,340 feet high, and in clear weather may be seen from a distance of 50 or 60 miles. The southern part is low and sandy.

Martinez Peak.

The northern and eastern shores are abrupt and cliffy, and along the latter coast there is an almost continuous line of reefs and breakers. To the northward of East Point, (which is marked by a little conical hill on the edge of the cliff,) and off Point Serra Negra, several islets and rocks extend out about $\frac{1}{2}$ mile, but are inside of the meridian of the Eastern Point. The southeast point of the island is called Wreck Point, the English sloop of war Erne having been wrecked there in 1819. It is low, sandy, and surrounded by a reef. Great caution is required in approaching the southern point at night, as the land can hardly be seen 10 miles off, even in the day-time. The lead should be kept going, and vessels should not get inside of the 30-fathom line. Horn Point is the northwestern point of the island: it is a cliff surmounted by a hillock. From this point the coast deepens to Manuel Point situated to the northward of Northwest Hill; from thence it trends toward the south, forming a number of little bays. The anchorages are all bad on the NW., N., and E. coasts. From Wreck Point to Northwest Hill the depths vary, permitting an anchorage in some of the bays.

Coast.

Reefs.

Rocks.

Wreck Point.

Horn Point.

Manuel Point.

There are numerous salt-ponds on the island, and the salt extracted is the principal production of the island. The soil, even in the valleys, is so barren as to bear no trees nor verdure except a few inconsiderable shrubs. A railroad has been built to carry the salt to the shore. The only village on the island is in South Bay, (Santa Maria,) situated on the south coast. It is difficult to procure either water or provisions.

Resources.

Village.

- Currents.** On approaching Sal from the north it will frequently be found that the currents are strong, irregular, and influenced by the wind, this island being almost on the western limit of the African-Polar current. In clear weather the island may
- Making land.** be seen from a distance of 40 miles; sometimes Martinez Peak can be seen still further; these are exceptional cases, however, as the high lands of all the Cape Verde Islands are generally covered with clouds.
- South Bay.** South Bay lies between Wreck Point and South Point; these points are distant from each other 2 miles, bearing $W \frac{3}{4} S.$ and $E \frac{3}{4} N.$
- Anchorage.** Anchorage may be taken in 7 fathoms in the middle of the bay, just inside of a line joining the two points. Too great
- Caution.** caution cannot, however, be exercised in navigating near South Point, as a sandy spit extends from it nearly 1 mile $SE \frac{1}{4} S.,$ with 14 fathoms close to and 25 fathoms at $1\frac{1}{4}$ miles. Wreck Point is low and fronted by rocks for $\frac{1}{2}$ mile. The soundings in the bay near the beach vary from 3 to 4 fathoms, and in the middle from 5 to 10 fathoms. To enter the bay Wreck Point must be rounded at $1\frac{1}{4}$ miles, in from 9 to 12 fathoms, and the anchor let go when the two points are in line. Vessels may also anchor on the west side of South Point in 7 fathoms, $\frac{1}{2}$ mile off shore, with Wreck Point just
- Port Salina.** shut in. This anchorage is called Port Salina, it being near the artificial-salt pans
- Mordeira Bay.** Mordeira Bay, situated between Turtle Point and the Lion's Head, is the best anchorage in the island. It is sheltered from N. to NE. One mile off shore the soundings are 9, 10, or 11 fathoms, decreasing gradually to the rocks, near which there are $1\frac{1}{2}$ and 2 fathoms. In some places the bottom is
- Anchorage.** bad, and the soundings should be examined before anchoring. The best berth is in 9 fathoms, 1 mile from the Lion's Head, with Bird Island just shut in and Turtle Point bearing S
- Water.** by $E \frac{3}{4} E.$ No water can be obtained. Fish and turtles abound.
- Tides.** It is high water, full and change, at 7^h 45^m. Rise of tide about 5.2 feet.
- Turtle Point.** Turtle Point is a low, irregular point of land, surrounded by rocks and breakers, near which are 3 and 6 fathoms, with 16 fathoms 1 mile off shore.
- Lion's Head.** Lion's Head Point is high and overlooked by a hill whose form gives its name to the point. This hill is 620 feet high.
- Bird Island.** Off the point lies Bird Island, which is a small island connected to it by rocks. From it Turtle Point bears $SE \frac{1}{4} S.$ distant 4 miles.

Palmira Bay lies between the Lion's Head and Palmira Point. It is $3\frac{1}{2}$ miles wide, but not very deep. Anchorage may be taken 1 mile from the shore, in from 10 to 17 fathoms, or, closer in, in from 8 to 5 fathoms; it is entirely open and there is usually a heavy sea. Between Palmira Point and Northwest Hill the soundings vary from 29 fathoms at 1 mile off shore to 17 fathoms close to it.

Palmira Bay.

Anchorage.

Bonetta Rock, which was said to exist in lat. $16^{\circ} 17' 20''$, N., long. $22^{\circ} 23' 50''$ W., has been searched for frequently, but has never been found. It is probable that the vessels reported to have been wrecked on this rock were drifted to SW. by the current, and lost on Hartwell Reefs off the northeast coast of Boavista.

Bonetta Rock.

The currents in the vicinity of Boavista Island are very irregular. Their general direction is between S. and W. Near Sal Island they have been found setting N 75° W. and N 8° W. Their average velocity is about $\frac{1}{2}$ mile per hour. Great caution is required, therefore, in approaching the coast of Boavista, and considerable difference will often be found between the dead-reckoning and the true position, owing to these currents. There is no doubt that many vessels have been lost on Hartwell and Braithwaite Reefs when they were supposed to be many miles to the eastward of Boavista.

Currents.

BOAVISTA ISLAND.

Boavista, one of the largest islands in the group, is in shape an irregular polygon; it is 18 miles across from E. to W., and 16 miles from N. to S. A ridge of high land, running NNW. and SSE., divides it into two unequal parts. The northern peak of this chain is called Juan Fernandez, and the southern, South Mountain. In the northeast part of the island are the two conical hills, Mounts Broyal and Ochel-lo, and in the southwest Platform Hill and Man Mountain. The climate is considered healthy. The inhabitants, 5,000 in number, are noted for their extreme indolence. Cattle-breeding is the principal resource of the island, large quantities of hides and tallow being exported annually. The salt-ponds are very rich, and about 117,800 bushels of salt are exported each year. The greater portion is obtained from the artificial pans to the northward of English Road, but the best comes from the natural ponds in the northern part of the island. Some attempts have been made to raise cotton, but without success.

With the exception of the principal headlands, the coast is almost everywhere low and sandy. The northeast point is

Coast.

N. E. Point.

high and lined with breakers. From thence the coast curves slightly to East Sand Head or Point Orratão, and is everywhere low and sandy. Off the latter point a sand-bank extends 1 mile NE., and a short distance south another reef stretches about the same distance to the eastward.

Point Estancia or Brazen Hill Bluff bears SW $\frac{3}{4}$ W. from the preceding. It is a high cliff easily recognized by the conical height (East Hill) which surmounts it. From thence the coast curves slightly toward the southward to South Point or Point Urrateo, and is everywhere low. South Point is low and surrounded by foul ground, and an islet of the same description lies $\frac{2}{3}$ of a mile to the eastward. Between this point and West Point the coast is low; the latter is a low, sandy point projecting some distance to the westward. Nearly midway between this point and Coral Point, and a little to the southward of the parallel of Coral Hill, a long reef extends perpendicularly to the coast 1 mile, and from thence to Coral Point the shore is lined with breakers.

Point Verandinha or Coral Point is low and rocky. From thence the coast deepens, forming a long bay called English Road. From the northern part of the bay to North Point the coast is irregular and lined with foul ground. North Point is high and abrupt, and may be recognized by Peak Resher which overlooks it; it is surrounded by foul ground. SW. of the point, and about $\frac{1}{2}$ mile off shore, is Bluff Reef, on which the sea continually breaks. Between North Point and Point Broyal, on the north side of the island, the coast deepens and is low and sandy. There are several reefs nearly in a line joining the two points. Point Broyal is very irregular in shape and of moderate height. It may be recognized by a peak of the same name which rises a little to the southward.

Between Point Hartwell, the northeast point of the island, and East Sand Head, lies a large bay called by the Portuguese Porto do Norte. It is open to the NE., and affords a poor anchorage with the wind from that quarter. Off this bay are the Hartwell Reefs, North Cay, and Braithwaite and Dutch Islets, surrounded by reefs. Between these there is sufficient depth for ships, and a good holding-ground to leeward of Hartwell and Braithwaite. North Cay is nearest the coast, and is connected with it by a line of reefs. This anchorage should only be taken in case of necessity or during the rainy season by vessels loading with salt from the neighboring salt-works.

The Hartwell reefs and islets, which we have mentioned form three channels through which vessels may pass to

reach the anchorage. The best one is between Braithwaite and Dutch Islets; it is about $1\frac{3}{4}$ miles wide, and the soundings are regular from $14\frac{1}{2}$ to 5 fathoms. Anchorage may be taken in from 5 to 7 fathoms $\frac{1}{2}$ mile to leeward of Braithwaite, this islet bearing $N\ 41^{\circ}\ E.$, and Dutch Islet $S\ 30^{\circ}\ E.$ The holding-ground is fair. Middle Channel.

Hartwell Reef is about $1\frac{3}{4}$ miles from the coast, and between its northwestern extremity and North Cay there is a channel $\frac{1}{2}$ mile wide. The least depth in this passage is 7 fathoms. This reef is very dangerous, as the currents here set directly on it, and it must be carefully avoided when taking the passages. It is composed of detached rocks, on which there are only 9 and 13 feet of water, with depths of 22 feet in the spaces between them. North Cay is $\frac{1}{2}$ mile from the coast, to which it is joined by a bank on which there is only 6 feet of water. North Channel.

Between the reef around Dutch Islet and the reef off East Sand Head there is another channel, 6 cables wide, with a depth of 10 fathoms. South Channel.

Vessels should never attempt any of these passes without having a boat ahead to take soundings and show the way. In going from the anchorage to the SE. with the wind from ENE. or NE., steer to the southward, taking advantage of the easterly current which generally prevails in the bay, and pass between Dutch Island and the spit off East Sand Head. If the wind prevents taking this channel, steer to the eastward between Braithwaite and Dutch Islands. Directions.

When in the vicinity of Hartwell Reef, if not bound to Porto do Norte, the north point of Boavista should be kept open of Broyal Point bearing $W\ \frac{3}{4}\ S.$, and the southeast bluff of the island open of the East Point bearing $SW.\ \frac{3}{4}\ S.$ Too great caution cannot be exercised at night or in thick weather. Caution.

This bay is frequented, as has been stated above, by vessels coming for salt during the rainy season. Fish abound, and a small quantity of provisions may be obtained from the village of San João Baptista]do Norte, which is about 3 miles from the anchorage. Resources.

In case of necessity, or to take a pilot, vessels may anchor between South Point and South Island in from 10 to 12 fathoms; this anchorage is good with the wind at NE., but at other times is dangerous. Curralinho.

To the westward of South Point is an anchorage in what is called Portuguese Road. The best berth is in 14 fathoms, about 1 mile from shore, Platform Hill bearing $N\ 36^{\circ}\ W.$, and South Island just shut in by South Point. From this Portuguese Road.

- anchorage the soundings diminish gradually to 7 and 6 fathoms. In leaving this anchorage and going to the westward a wide berth must be given to the point below Platform Hill, as there is said to be a reef extending from it $3\frac{1}{2}$ miles to seaward, on which the sea sometimes breaks. This reef is not laid down on the charts, and a very wide berth should therefore be given to the point.
- Reef.
- Coral Reef. Verandinha or Coral Reef is on the parallel of Coral Hill, and $1\frac{2}{3}$ miles from the shore; it is $\frac{2}{3}$ of a mile from E. to W., and a little less than $\frac{1}{2}$ mile from N. to S.; its center bears SW. by W $\frac{1}{4}$ W., distant $2\frac{1}{4}$ miles from Coral Point. The sea usually breaks on it, and sometimes shows the central part out of water.
- English Road. Porto Sal Rey or English Road lies to the northward of Coral Point, (Point Verandinha.) Near the beach, in the middle of the bay, is the village of Rabil or New Town, founded in 1810; its church-clock makes a good mark in approaching the anchorage. Between this village and Old Town, or Sal Rey, which is in the northern part, are numerous salt-pans. Near the old town is a mole where boats can land at all times. The shores of the bay are principally sandy.
- Small Island. Small Island is $\frac{1}{2}$ mile from the northern point of the bay, and is connected with it by a bank of rocks, over which small boats can pass in fine weather; it is 1 mile long, from NW. to SE.; a bank extends $\frac{1}{2}$ mile from its northwest extremity.
- Ten-Foot Reef. English Road is $4\frac{1}{2}$ miles wide from Coral Point to the southeast point of Small Island; the entrance is divided into two passes by the Ten-Foot Reef, a dangerous bank with only 10 feet of water on it, and on which the sea usually breaks; this reef is $1\frac{1}{3}$ cables long from E to W., and about 165 yards broad; its center lies on the following bearings: $\frac{1}{2}$ mile SW $\frac{1}{4}$ S. of the SE. point, and $1\frac{1}{2}$ miles S $\frac{1}{2}$ E. of the northwest point of Small Island, and $3\frac{1}{2}$ miles NNE. of Coral Point. In the passage between the reef and island there is a depth of 6 fathoms. The shore of the latter is bold and may be kept close aboard.
- New Town Reef. This reef is abreast New Town, and about 100 yards from the beach, with 9 fathoms off the western edge.
- Inner Reef. This reef is in the northern part of the bay and close to the shore. The sea breaks on it when rough. It is $\frac{1}{2}$ mile S 82° E. of the southeast point of Small Island. There are 3 fathoms at 4 cables from its western edge. A bank, with from $\frac{1}{2}$ to 1 fathom of water on it, extends from New Town Reef to Inner Reef, and from thence to the reef extending from Small Island to the shore.

Vessels generally anchor southeast of and near to Small Island, in 6 or 7 fathoms, keeping Old Town open with the northeast point of the island, the highest point of the latter bearing N 7° W. This anchorage is sheltered from N. to SSE., but is exposed to the westward. With the wind at NW. the sea is very heavy, and it is better at such a time to put to sea. Rollers occur between January and March, and are very heavy and render the anchorage unsafe. Some authorities say that vessels with chain-cables can lie with perfect safety at all times, but undoubtedly this would be attended with considerable risk, and it would be more prudent to make an offing.

When coming from the northward, (which is the best point of approach with a northeast wind,) steer for the northwest point of Small Island, and when $\frac{1}{2}$ mile past it steer for the church in New Town, and anchor when on the bearings given above. When the pass on Small Island and Peak Resher are in line, the Ten-Foot Reef is passed. Sometimes, on account of a rock under water off the southeast point of the island, vessels keep on farther to the eastward and anchor in the same depth (6 or 7 fathoms,) with Small Island open on the north point of the bay; this route obviates the necessity of making a tack to reach the anchorage. If Ten-Foot Reef does not show, wishing to pass to the southward of it, steer outside, and when the church in New Town bears E b S., stand in for it, going no nearer the reef than 6 fathoms; after once opening Old Town, take care not to close it again. This course will take you about $\frac{3}{4}$ of a mile from the reef.

In the middle of a line joining Coral Point and Ten-Foot Reef there are 10 and 11 fathoms, decreasing gradually to the N. and S. to 6 and 7 fathoms. In beating up from the southward, with the wind at NE. it will be better, after doubling Coral Reef, to stand off on the starboard tack far enough to make the anchorage on the in-shore or port tack, passing to the southward of the reef as described above. Sometimes vessels anchor west of the church, in 8 or 10 fathoms, with the southeast point of Small Island and Peak Resher in line, thus avoiding the danger of beating near the reef. The bottom at this anchorage is of fine white sand.

The establishment of the port is 7 hours. Tide rises 5.2 feet.

During the rainy season storms and variable winds prevail, and the rollers are often very heavy, rendering the anchorages unsafe.

There is very little water for shipping on the island. Portuguese Roads is the best place to obtain it, but it is not

Anchorage.

Directions.

Tides.

Rollers.

Water, &c.

good and costs considerable. A small quantity of fresh provisions may be obtained, being brought from St. Antonio and St. Vincent. Fish abound in all the bays.

Soundings.

Off the west, north, and east coasts the bank of soundings is quite wide; nine miles to the westward of Coral Point there are 58 fathoms; fine sandy bottom. The soundings decrease gradually toward English Road, to 30 fathoms at $\frac{1}{4}$ miles from and on the parallel of New Town, and to 11 fathoms at $1\frac{1}{2}$ miles from the beach. At the same distances west of the northern part of the bay the depths are much greater. At 9 miles off shore, to the northward of Small Island, are 76 fathoms, decreasing to 23 fathoms at 2 miles. On the meridian of North Point, and 7 miles from the point, are 67 fathoms, decreasing gradually to 20 fathoms at 1 mile. Between this point and Point Broyal the bank is about the same, but to avoid the reefs scattered between these points, vessels should not go inside of 26 or 24 fathoms.

To the eastward of Point Broyal the limit of the bank with 54 fathoms on it is only $3\frac{1}{2}$ miles from shore, and it is still narrower off Northeast Point. From thence to East Sand Head the limit is a little to the eastward of Hartwell Reefs. Off the northeast coast the plateau extends a considerable distance seaward, and the depths are very irregular, varying from 30 to 200 fathoms.

If approaching the island in thick weather the soundings will be a good guide as to the position, and the lead should always be kept going.

Caution.

In clear weather the dangers around Boavista show themselves, but when misty it is not advisable to approach the island, as the currents are strong and irregular.

Leton Rock.

Leton Rock is a dangerous patch lying SW. of Boavista, in the passage between that island and Mayo; it is about 1 mile long, N. and S., and is just under the surface of the water, so that at times the sea breaks over it with great violence. From the middle of the patch the south point of Boavista (Point Horatio) bears N 64° E., distant $21\frac{1}{2}$ miles; Coral Hill N 34° E., 19.7 miles; north point of Mayo S 5° W., $28\frac{1}{2}$ miles. The position of its center on the chart is $15^{\circ} 47' 50''$ N., $23^{\circ} 09' 50''$ W.

Soundings.

This rock is the summit of a coral plateau, or coral mixed with sand and broken shells, which is about 15 miles long in a north and south direction, and 9 miles broad in an east and west direction; it has never been accurately surveyed. On the plateau around the rock are the following soundings: 5 miles N. 74 fathoms, fine sand with reddish specks; $2\frac{1}{2}$ miles N. 55 fathoms, fine sand, small shells or broken shells; $1\frac{1}{2}$

miles N. W. 35 and 43 fathoms, fine sand and white coral; 1.7 miles E. 38 and 40 fathoms, fine sand; 2 miles W. 63 fathoms, coral, sand, and broken shells; 3.2 miles S. 39 fathoms, fine sand and shells, and at 3.7 miles SE. 45 fathoms, fine white sandy bottom.

In passing through the channel which separates Boavista from Mayo, it is better to keep near one shore or the other and avoid the mid-channel. The sea does not break over Leton Rock, except when rough, and as the currents set to the west great caution is required. During foggy weather the passage should not be attempted. Caution.

MAYO ISLAND.

The island of Mayo lies 44 miles SSW. of Boavista; it is elliptical in shape, being $12\frac{1}{2}$ miles long north and south, with an average breadth of $6\frac{1}{2}$ miles east and west. The island is moderately high, and may be seen in very clear weather 30 or 35 miles when making the hills in the eastern part. The central part of the island is level, while to the eastward are Mounts San Antonio, Pinos, and Mayo. Between Antonio and Pinos there is a large valley opening to the westward. In the southwest part of the island is a group of three peaks, of which Mount Balalha is the most conspicuous. These three peaks, when seen from NNW. or SSE., appear in line.

The east side of the island is generally rocky; the remainder has low and sandy points. When approaching the island from the SE., and at about 15 miles, it appears like a group of islets, because at this distance the low sandy plateaux which connect the heights cannot be seen.

The soil of Mayo is generally dry and unproductive. There is only one spring of water in the island. The coast is plentifully stocked with fish, which supply, with a few vegetable productions, subsistence to the poor inhabitants.

The north point of the island is low and narrow, jutting out about $1\frac{1}{2}$ miles in a N b W. direction, with detached rocks on its east and west sides for one mile. North Point.

One and a half miles N 58° E. of North Point is a very dangerous cluster of rocks called Galhao Reef. It is 1 mile in extent in a NNE. and SSW. direction. The outer part of the reef bears NE. b E. from North Point, and the inner edge E $\frac{1}{2}$ N. No soundings have ever been made near this reef. This part of the coast should be approached with great caution, as 6 miles N $\frac{1}{4}$ E. of Galhao Reef there is a bank extending east and west, on which the least depth of water obtained is 45 fathoms, fine sand, with red specks, with Galhao Reef.

more than 130 fathoms between it and the bank around Leton Rock.

Coast. From North Point around to East Point the coast is generally rocky and lined with breakers. East Point is low and sandy.

South Point. The south end of the island is low and terminates in a sandy point; from thence the coast runs in nearly a straight line to Town Point, which is foul for four cables.

Blisset Reef. Two miles W $\frac{1}{4}$ N. of South Point, and $\frac{1}{3}$ of a mile off shore, is a sunken reef with 7 fathoms a short distance outside of it. Salt-pan Point, open on Town Point, and bearing NW $\frac{1}{4}$ W., clears it on its southwest side. A little to the westward and closer in shore is another little patch with 3 and 5 fathoms near it.

Salt-pan Point is the southwest point of the island, and forms the northwest limit of English Road.

Rocky Point is the northwest extreme of the island; the south part of the point is rocky and foul.

English Road. English Road is a small bay situated between Salt pan Point and Town Point. It is sheltered from winds to the north and east, but entirely open to the southwest; vessels may anchor in 6 or 7 fathoms near the beach. Everything should be in readiness to get under way during the wet season, as the anchorage is dangerous during a westerly gale. A flag-staff on the hillock to the northward of the village is a good mark for recognizing the anchorage.

Anchorage. To take anchorage, bring Flag-staff Hill in line with Mount Balalha and anchor in 7 fathoms very near the shore. Approaching this anchorage caution is requisite, as the bank of soundings is very steep.

Water. No good water can be had at this anchorage; there is a well near the salt-pans, but the water obtained from it is very indifferent.

Landing. Landing, as a rule, is very bad. The village contains a custom-house, church, and a battery, and near it are always enormous piles of salt ready for exportation. The shore abreast the town is steep, bluff, and rocky. There is a crane here for loading and unloading boats.

Supplies. Superior cattle are bred on the island; salt is produced in great quantities, and fish are plentiful, but wood and water are scarce.

Tide. It is high water, full and change, at 6^h 30^m. Approximate rise of tide 5 feet.

Soundings. The bank of soundings off English Road is very narrow; at $\frac{1}{2}$ mile from shore the depth is 44 fathoms, decreasing to 7 fathoms at $\frac{1}{4}$ of a mile, so that the anchorage given above will be $\frac{1}{4}$ of a mile from the point on the parallel of the vil-

lage. The bottom on this bank is of coral and sand, and vessels must not anchor outside of 15 fathoms, as this depth is almost on the limit of the bank.

A little to the southward of Rocky Point there is quite a deep bay called Calheta; it is almost everywhere lined with rocks, one being nearly on a line between the north and south points of the bay. This bay is only frequented by small crafts. Rocky Point can be recognized by some palm-trees and brushwood growing a little inland from it.

Calheta Bay.

Rocky Point.

To the southward of Foul Point is another small bay with 7 fathoms, with a sandy bottom, in its northern part; it is protected to the S. and SE., but is little frequented.

Bay of Pan Sec-
co.

The bank of soundings around Mayo has never been surveyed except off its northern coast; here it is 11 miles wide, and at that distance off shore the soundings vary from 47 to 65 fathoms. The nature of the bottom is variable; in some places it is coral, and in others sand, with red specks or fine gray sand.

Soundings.

The northeast winds are generally very fresh in the channel between Mayo and St. Jago. As before stated, the east coast of St. Jago must not be approached very close on account of the calms and currents which prevail in its vicinity. Vessels leaving English Road, bound for St. Jago, should steer well to the westward, and when Leton Rock is doubled, steer direct for the channel between Mayo and that island, rounding its eastern point.

Directions.

ST. JAGO.

St. Jago, the largest and most populous island of the Cape Verde group, is about 31 miles long, in a north-northwest and south-southwest direction, with a general width of 12 miles, tapering to 4 miles at its north point. The population is 24,000, and the island is the most frequented, from its being the residence of the governor of the colony. From a commercial and agricultural point of view it is the most important island in the group, notwithstanding its reputation for unhealthiness. The southwest part of the island is the most unhealthy; this is occasioned by the swampy nature of the coast, and the stagnant water of two sluggish rivers, which engender fevers. It is principally inhabited in the south and west.

The island is very high, the highest point being a conical mount, called Mount St. Antonio, which attains the altitude of 7,400 feet. There are numerous ravines which bring down perennial streams, and in these ravines there is a good deal of cultivated ground where crops of sugar-cane, coffee, beans, mandioca, &c., are raised.

On the coast there are no trees. The land is cultivated in cotton, aniseed and purgueira, the oil of the latter being largely exported. A coarse sugar is made from the juice of the sugar-cane, and a spirit called tafia is distilled; large quantities of both are exported annually. Although the island is of a volcanic origin, it is the best watered in the group, and the water is generally of excellent quality.

Coast.

The coasts are generally abrupt and high, and in some places formed by cliffs lined with rocks. There are no detached dangers. The southeast part of the island, when seen from N. or S., appears like a long, low point.

Southeast Point.

The southeast point of the island is low and surrounded with breakers. A little to the westward of the point there is a small cove with a sandy beach; its southern limit is high and steep. From thence the coast becomes lower and deepens to the west, forming a bay open to the eastward. At the bottom of this bay are numerous palm-trees and some houses. A little brook empties into the bay near these.

St. Francis Bay.

St. Francis Bay is 2 miles from the southeast point of the island. This bay may be easily distinguished from that of Porta Praya, because the east point is low and surrounded by breakers, while the east point of Porta Praya is high and clear; and also, at $1\frac{1}{2}$ miles N. of the entrance to the latter, there is a hill with a flag-staff. St. Francis Bay may also be known by its having at the back of it, and nearly at the water's edge, a high, flat-topped table-land standing between two mountains, while at the bottom of Porta Praya there is a long, low valley running inland for some distance. From St. Francis Bay to Signal-post Hill, $1\frac{1}{2}$ miles north of Porta Praya, the shore is high, cliffy, and lined with rocks close to.

Punta das Bicudas.

One mile south of Signal-post Hill is Punta das Bicudas, the eastern point of Porta Praya. Punta das Bicudas is bluff and steep-to; there are from 5 to 7 fathoms near it.

Punta Temerosa.

One mile and a half W by S $\frac{1}{4}$ S from Punta das Bicudas is the rocky Punta Temerosa, which forms the western limit of the bay. On a line joining these two points the depths are 10, 12, and 14 fathoms, decreasing gradually to one fathom at the bottom and off the town.

Porta Praya.

Porta Praya is a fine bay, sheltered from all winds except those from SW. to SE. The winds, except in the tornado season, are generally in the NE. quarter, frequently blowing very fresh and squally; there are also frequent puffs from over the high land, but the sea is smooth and the anchorage safe. The shores on the east side are high and abrupt, and near the town is a long, sandy beach which extends to abreast of Quail Island; from thence to Punta Tem-

erose the coast is high and lined with rocks and breakers. The town of Praya, which contains 2,600 inhabitants, is built on the top of a plateau; this plateau is surrounded by deep ravines in which there is some cultivation; the sides are covered with steep rocks, rendering the ascent to the town difficult. The church and residence of the governor are near the sea-face of the town. The governor-general of the Cape Verde Islands resided formerly at Ribeira Grande, an episcopal city and the capital of the island; but foreign ships having totally abandoned the road of Ribeira Grande, which is very bad and of difficult access, for that of Praya, the governor now resides there during the dry season. It is estimated that 60 large sailing-vessels come to this port annually. There is a battery of 26 guns in front of the town and several other smaller ones around the bay. All are poorly armed and out of repair.

On the western side of the bay is a small black island called Quail Island. It is almost level on top, but rugged at each end; it lies about 220 yards from the shore, to which it is connected by a rocky ledge only passable for small boats in fine weather, there being a narrow channel with 6 and 10 feet of water in it; a rocky ledge runs off its north point, between which and the fort there are not more than 3 fathoms. There is a good landing on the west side of the island. Quail Island.

Vessels rarely anchor to the northward of a line drawn from the battery on Punta Temerosa to that on Punta Visconde; a good berth may be taken in from 8 to 10 fathoms of water on the following bearings: the flag-staff on the battery of the town NW.; the same on the battery on Punta Temerosa SW $\frac{3}{4}$ W.; Quail Island (south point) W $\frac{3}{4}$ S. Vessels often anchor on a line joining Punta das Becudas and the southeast point of Quail Island in 8, 10, 12, or 14 fathoms, and it is a general rule that anchorage may be taken anywhere in the bay, in from 9 to 11 fathoms, good bottom, but nearer the eastern shore than Quail Island. The bottom is of sand, pebbles, and coral, and affords a fair holding-ground. In fine weather the anchorage, the bearings of which are given above, is perfectly safe, but during the stormy season, when it may be necessary to get under way if the wind is strong from SE. or SW., it is better to anchor farther out, in 16 or 20 fathoms. From this position either point can be easily doubled. Anchorage.

It is better to approach Porta Praya from the eastward, as the current generally sets S. or SW., and the northeast wind will be fair to the entrance of the bay. It will be prudent before rounding the southeast point of St. Jago to furl the top- Directions.

gallant sails, and take a reef in the topsails, as the squalls which come off the high land are very heavy. Steer along the coast, keeping it about $1\frac{1}{2}$ miles distance, and when off Punta das Bicudas, which may be passed close to, haul up for the anchorage.

If coming from the westward it will be difficult to beat up against the wind and strong current which is usually found there.

If the land-breeze is observed to be light in the bay, it will be better to stand off and on outside, as, should the wind fail, the vessel might be drifted on the rocks by the current. The sea-breeze, in settled, fine weather, sets in about noon, and lasts until 4 or 5 p. m.

Stormy season. As has been already stated, this anchorage is safe during the fine season, but during the rainy season, (July, August, September,) the wind sometimes blows with force, from SE. or SW., and sends in a heavy swell that renders it unsafe for sailing-vessels. When there are indications of these gales it will be prudent to put to sea.

Tides. It is high water, full and change, at Porta Praya at 6^h. Rise of tide about 5 feet.

Supplies. Bullocks of a fair quality may be obtained. Game, fruit, and vegetables abound. The oranges are particularly fine and are very cheap. Formerly water had to be rafted off in casks; now it may be bought from a merchant of the town, who sends it off to the ship. The best landing is in the north-west part of the bay near the town, a steep road leading to it. Fish abound, and there is an excellent place for hauling the seine in the western part.

Coal. There is a coaling-station on Quail Island, but the facilities for coaling are not comparable with those at Porto Grande and the island of St. Vincent.

Ribeira Grande. Ribeira Grande, commonly called La Cidade, is situated in a ravine 9 miles west of Praya. This was formerly the principal port of the island, but it is now only accessible for small craft, the old anchorage having been blocked up.

There are several other small bays or coves on the coast of St. Jago, but they are generally practicable only for small craft. At 4 miles west of Ribeira Grande there is a small cove called Port Comicos; from thence the coast trends to the NW., and at 10 miles further on is the little port of San Antonio. From this point to Tarrafal Point. (northwest point of St. Jago,) the coast runs N. and S. for 18 miles, and includes two small coves, with sandy beaches, separated by a rocky jutting point. The one to the south is called Ribeira da Barca, and the other, 6 miles farther north, Ribeira da

Prata. During fine weather anchorage may be taken off these beaches in from 6 to 13 fathoms, sandy bottom. Water, wood, and a small quantity of provisions may be obtained. Six miles north of Ribeira da Prata, and near the northwest point of the island, there is a bay called Tarrafal Bay; according to the native seamen it is safe during the rainy season, but entirely exposed to the northwest winds. Anchorage may be taken in from 10 to 17 fathoms, sand or gravel bottom. There is a custom-house station here, but no habitations. Fire-wood, water, and a few supplies may be had. It is frequented by vessels coming for orchal.

Ribeira da Prata.

Tarrafal Bay.

Wood.
Water

Tarrafal Point, the northwest point of St. Jago, is high and abrupt; from thence the coast trends to the SE. A little to the eastward is a large bay called Malguetas, which is entirely open, and dangerous on account of the calms, currents, and heavy swell in its vicinity. Sailing-vessels should keep 9 or 10 miles off this coast. There is also another small port in about the middle of the east coast, called Port St. Jago; it may be recognized by the palm-trees growing near the bottom, and by the church on its southern part. It is dangerous, and rarely attempted.

Tarrafal Point.

Malguetas Bay.

Port St. Jago.

FOGO ISLAND.

Fogo Island is nearly circular; it is 43 miles in extent, and lies 50 miles SW. of St. Jago; it is the loftiest of the Cape Verde Islands, and may be seen from a long distance, the principal peak in the northeast corner being 9,700 feet above the sea. There have been two eruptions from this volcano in the present century; the last was in 1847. It seems now to be extinct, and quantities of sulphur are obtained from the inside of the crater. The coast is generally high and abrupt. The ground is clear within a mile of the shore on the northwest, west, and south parts; but on the northeast, east, and southeast, a rocky plateau extends a short distance off shore. There is a great scarcity of good water on the island. The inhabitants are Spanish, and number about 13,000. The climate is moderate in the northern part, but to the southward the heat is suffocating and droughts are frequent.

A rock is said to exist off the north end of Fogo Island; its supposed position is 4 miles off shore, with the peak bearing S b E.

Caution.

Ships should not approach the high parts of the island, for, although a strong breeze may be blowing in the offing, light winds and calms prevail near the shore.

Winds.

- Currents.** Off the north and northeast points of Fogo the currents are strong, and influenced by the winds outside.
- Anchorage.** The principal anchorage of Fogo is off the town of Nossa Senhora da Luz, in the southwest part of the island. The roadstead is entirely open to the west, but sheltered from easterly winds by the high land which surrounds it. Anchorage is taken $\frac{1}{2}$ mile from the shore in 25 fathoms, rocky bottom, with the north point of the bay bearing N 2° W.; the south point S 50° E., and the battery N 52° E. Anchorage may also be taken $\frac{1}{4}$ mile from shore in from 10 to 17 fathoms; bottom, sand or rocks. At $\frac{3}{4}$ mile off shore there is no bottom at 130 fathoms. The landing is very bad. On account of the calms under the high land, the coast should not be approached until off the town. Short sail should be carried, as the squalls are violent.
- Porto da Villa.** There is another anchorage, a little to the northward of and separated from Luz by a sandy point. It is entirely open to the west, and the landing is very bad. Anchorage may be taken in from 12 to 17 fathoms, same bottom as at Luz. Vessels are said to anchor in Porto da Villa in the wet season, and at Luz at other times on account of a curious
- Shifting sands.** phenomenon which modifies the nature of the bottom. In both ports the bottom is rocky, covered with a thin bed of sand. During the period when the winds blow from the southward, the sands are carried from Luz to Porto da Villa, and in November, when the northeast trades set in, are carried back again to Luz. No soundings are obtained around
- Soundings.** the island with a line of 130 fathoms, $\frac{3}{4}$ of a mile from shore.

BRAVA ISLAND.

Brava, formerly called St. John Island, lies $8\frac{1}{2}$ miles west of Fogo. It is very high, and would be seen at a great distance were it not constantly covered by a dense atmosphere. There are a number of peaks scattered over its surface, which is 10 miles in extent. Off the northwest coast there is a small islet lying close to the land. The climate is healthy. The inhabitants number about 6,000. There is considerable cultivation in the valleys. Fruits and vegetables abound. Large quantities of salt and saltpeter are obtained. There are six sources of water on the island.

- Rombos Islets.** The Rombos, or Romes Islets, are two rocky islets about 3 miles in extent, lying in a northeast and southwest direction, 2 miles apart, but almost connected by rocks forming a crescent. From the eastern islet the northwest point of Fogo bears E b S $\frac{1}{4}$ S., distant 6 miles; from the western and higher islets the nearest port of Brava bears S $\frac{1}{4}$ W., distant

five miles. They are surrounded by deep water, but the ground between them is foul; clear channels exist between them and Brava and Fogo. Soundings.

There are several anchorages round Brava, principally for coasters; they are difficult of access, and only afford supplies in limited quantities. Anchorages.

The best is called Furna, or the Oven, and is on the east coast, a little to the southward of the northeast point of the island of Punta do Jabundo; it is small, shaped like an oven, is sheltered from winds except those from SE. and SW., and the water is very deep close to. Vessels anchor in $21\frac{1}{4}$ fathoms, and moor with a line to the rocks astern. In going to this anchorage it is better to make the northeast point, and then steer south until the bay is open; it may be recognized by its form, as well as by the custom-house and other houses at the bottom. Go in with the sea-breeze and out with the land-breeze. There are two or three small boats here which show the way in. During the season of southerly winds, vessels leave this anchorage for another called Feignan de Augua, which is three miles NW. of Furna. It can contain five or six coasters anchored in $7\frac{1}{2}$ or 8 fathoms and moored to the rocks. It is open from NW. to NE. Water is plentiful. At $1\frac{1}{2}$ miles west of the south point of the island there is a small cove called Ancião, suitable only for small craft which go there for saltpeter. A little to the northward of Ancião is another called Ferreiros. Coasters moor to the rocks. Water in small quantities to be had. Furna.

All the island is well cultivated, and a large quantity of maize is raised for exportation. Fruits and vegetables may be had to a limited extent. Feignan de Augua.

DANGERS.

The following dangers have been reported near the Cape Verde Islands, but do not appear on the latest charts.

This shoal was reported by Capt. Thomas Fanning, of the brig Hannah, on the passage from Rio Janeiro to Trieste, June 25, 1824. Sounded in fifteen fathoms, granulated coral, on the southwest part, but supposed it much shoaler on the northeast parts, as the weed was plainly to be seen, from the mast-head, on the surface of the water. Its latitude was found to be $10^{\circ} 07' N.$; longitude about $27^{\circ} 32' W.$ In 1857 the Constantine sounded in 87 fathoms, rock and gravelly bottom, in lat. $10^{\circ} 09' 20'' N.$, long. $26^{\circ} 47' 10'' W.$; and Captain Pullen, in Her Majesty's ship Cyclops, could find no bottom, on the spot assigned to the Hannah Bank, with 2,000 fathoms of line. Ancião.

Ferreiros.

Products.

Hannah's Coral Shoal.

In 1868 the *Astrea* sounded all round its position, but without result.

Patty's Shoal. The position given for this shoal is 11° N., $24^{\circ} 30'$ W. Searched for by Lieutenant Wilkes, United States Navy, but not found. Erased from charts.

Porgas Bank. In the early charts of the Atlantic this bank has always been shown as extending 60 leagues N. and S., with a breadth of 6 leagues. It was unsuccessfully sought for by the *Severn* in 1819.

In 1819 Captain Fréminville sounded in 164 fathoms, in lat. $15^{\circ} 35'$ N., long. $21^{\circ} 40'$ W. In 1850 Mr. Allen, in the *Birkenhead*, obtained a cast in 86 fathoms in lat. 17° N., long. $23^{\circ} 03' 15''$ W. The bottom appeared to consist of pieces of shells and sand, or small particles of coral. The sea is said to be much discolored on the bank, which may serve to recognize it.

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